

E73-10895  
CR-133552

"Made available under NASA sponsorship  
in the interest of early and wide dis-  
semination of Earth Resources Survey  
Program information and without liability  
for any use made thereof."

EREP MONTHLY PROGRESS REPORT - NUMBER 4

Period: July 15, 1973, to August 15, 1973

INVENTORY OF FOREST AND RANGELAND RESOURCES, INCLUDING FOREST STRESS

Registration No. 418

E73-10895) INVENTORY OF FOREST AND  
RANGELAND RESOURCES, INCLUDING FOREST  
STRESS Monthly Progress Report, 15 Jul.  
- 15 Aug. (Pacific Southwest Forest and  
Range Experiment) 5 p HC \$3.00 CSCL 02F  
N73-29244  
G3/13 Unclas  
00895

Principal Investigator: Robert C. Heller

Coinvestigators: Robert C. Aldrich  
Frederick P. Weber  
Richard S. Driscoll

Forest Service, U. S. Department of Agriculture  
Pacific Southwest Forest and Range Experiment Station  
P. O. Box 245  
Berkeley, California 94701  
(415) 841-5121 ext. 540

INVENTORY OF FOREST AND RANGE LAND RESOURCES, INCLUDING FOREST STRESS

EREP Monthly Progress Report

Report No. 4

Period: July 15, 1973, to August 15, 1973

Principal Investigator: Robert C. Heller

Coinvestigators: Robert C. Aldrich  
Frederick P. Weber  
Richard S. Driscoll

A. Overall Status

On August 1, the silicon vidicon system was given an airborne test over the San Joaquin Valley. Response on the monitor and recorder replay was excellent. The width of strip displayed on the monitor is 500 feet at 1,000 feet of altitude. Longer focal length lenses will permit targeting smaller areas. Filters to match the 190A cameras were used in this test.

1. Atlanta, Georgia - forest inventory site (512 and 512A)

Mr. Kirby informed us that no usable SL-2 data were acquired over this site because the slide covering the S190A and S190B experiment was closed. Consequently, Mr. Kirby had this site included as a SL-3 mission. Expected date for an overpass is September 17 on GT-43. We will have the site manned five days prior to that date.

2. Black Hills, South Dakota - forest stress site (312)

On July 30, Mr. Kirby informed us that we could use the Targhee-Teton alternate site to collect SL-3 if we would agree to man the site. We deemed it best to obtain ground data with cooperative aid from the Teton National Forest and aerial coverage with the Forest Service aircraft and not to ask for NASA/ERAP support on this site. This is because we have better ground data in the Black Hills, and the likelihood of detection of stressed trees is higher. In any case, we flew the Forest Service aircraft to Jackson, Wyoming, on August 4, 1973, and maintained contact with PIMO on August 4 and 5. On August 5, at 1030 MDT (the time of SL-3 overpass), the site was covered with broken to overcast conditions, and this fact was reported to Clayton Forbes at PIMO.

The flight was continued on to Atlanta, Georgia, for the purpose of moving spectrometers and ERTS DCP's from the Atlanta site to the Black Hills site. These instruments have now been installed at the Black Hills site and will be energized to transmit data to ERTS on or about September 9, 1973.

ERE data from S190A and S190B were received on August 15, 1973, and given a quick-look analysis. Exposure and coverage from displaced GT-19 are excellent; we will begin analysis as soon as possible.

### 3. Manitou, Colorado - range inventory site (313)

Contact with PIMO-Houston (Mr. Dave Faulkner) on August 6, 1973, confirmed the SL-3 made a successful data-take run over site 313 on GT-48 on August 4, 1973, at approximately 1720 GMT (1120 MDT). The coinvestigator (Driscoll) was on the S-191 site at the advertised time of the data-take run. The sky was clear over the S-191 site, a cloud buildup was beginning in the northwest at 45° above the horizon, and there were few clouds around the mountain fringes of the test site. In general, cloud cover over the total test site was estimated at 0.2 to 0.3 at 1720 GMT. By 1745 GMT cloud cover over the test site amounted to approximately 0.4 to 0.6. These facts were verified by photographs from the ground and pyranometer readings. There was no wind at the S-191 site at the time of the mission. Measurements made during the GT-48 pass included apparent radiant energy of standing water, meadows and upland grassland using a PRT-5 and total irradiance using a pyrometer.

Mr. Faulkner advised that the ground track nadir for GT-48 over task/site 161313 was as originally advertised, that is,  $\pm 3$  miles directly over the Manitou Experimental Forest. This fact negates seasonal data comparisons between SL-2 and SL-3 since SL-2 had been displaced 60 miles to the west. Also, we were informed that RB-57 aircraft data were flown the same day as SL-3/GT-48, but we were not contacted prior to the mission nor have we had absolute confirmation about the mission from ERAP.

The test site vegetation at the time of the SL-3 overpass was generally at its peak growth for the year. Most forbs were blooming, grasses were mostly at anthesis, and shrubs were either in full bloom or first bloom. Rains during the previous three weeks ensured good growth of vegetation. The probability of plant community class separation in both EREP and ERAP data should be at maximum.

Data from aircraft support mission 239 for SL-2 were received July 30, 1973. Indexing of this data is approximately 75 percent complete. EREP data from SL-2 were received in Berkeley on August 15, 1973. Therefore, no data analyses were performed during this period.

B. Recommendations Concerning Decisions Required to Ensure Attainment of Experiment's Scientific Objectives

It is absolutely necessary that we get SL-3 data over the Black Hills site on GT-2 during the September time period to complete the forest stress experiment. It would be highly desirable to get coverage over the Atlanta and Manitou sites for seasonal comparisons. Manitou and the Black Hills will most likely be snow covered during SL-4.

C. Expected Accomplishments

We hope to report quality, resolution, and preliminary results during the next time period.

D. Significant Results, Practical Applications, and Operational Problems

The people conducting field experiments and manning sites are the same people analyzing SL-2 data. This will slow down our analysis. Hopefully, this situation will be relieved after September 21--the final SL-3 pass over the Manitou test site.

E. Summary Outlook

No coverage of Atlanta, Georgia, site impedes progress of that experiment. The receipt of SL-2, S190A and S190B photos for the Black Hills will permit photo interpretation and microdensitometer analysis to begin for that experiment.

F. Travel plans - August 15 to September 15, 1973

Four men will leave Berkeley, California, via Forest Service aircraft for the Black Hills site to get color infrared photography, scale 1:32,000 of that site to provide ground truth. Interpretation of these photos can begin prior to SL-3 overpass.

The silicon/vidicon will be tried over the stress site with filters to match ERTS and S190A and S190B spectral bands.

The four men will travel to the Manitou site and get very large-scale 70 mm photos for R. S. Driscoll in preparation for GT-48 overpass on September 21, 1973. This entire trip will require 40 man days (August 20 to 30, 1973).

From the Rocky Mountain Forest and Range Experiment Station, R. S. Driscoll and three men will spend approximately 10 man weeks at task/site 161313 making detailed ground measurements for plant cover, bare soil surface, and litter cover at selected locations.

Two men will return to the Black Hills site for one week beginning September 9, 1973, to man the site and to ensure that the spectrometers and DCP's are operating properly.